What is claimed is:

1. A printed circuit board (PCB), comprising

multiple layers laminated about optical generation, transmission and reception elements formed on a capacitor laminate,

the capacitor laminate including:

two sheets of conductive material and one sheet of intermediate dielectric material,

the optical elements including:

a generation device,

a transmission element to provide an optically clear path between generation and reception elements,

and a reception device,

all optical elements being located on the same plane and connected electrically in the Z axis to all other printed circuit board elements and surface devices.

2. The PCB of claim 1 wherein the optical transmission paths are formed by selectively removing areas of the conductive material of the capacitor laminate and placing an optically conductive fiber connecting the optical generation device and the optical reception device.

3. The PCB of claim 1 wherein the optical transmission paths are formed by selectively removing areas of the conductive material from the surface of the capacitor laminate

and placing an optically conductive polymer path connecting the optical generation device and the optical reception device.

4. The PCB of claim 1 wherein the optical transmission paths are formed by selectively removing areas of the conductive material from the surface of the capacitor laminate and a clear or open channel is formed within the PCB.

5. The PCB of claim 2 wherein the the optical generation device and the optical reception device are connected though the Z axis to other PCB elements by the use of blind, buried or subcomposite plated vias.

6. The PCB of claim 3 wherein the optical generation device and the optical reception device are connected though the Z axis to other PCB elements by the use of blind, buried or subcomposite plated vias.

7. The PCB of claim 4 wherein the optical generation device and the optical reception device are connected though the Z axis to other PCB elements by the use of blind, buried or subcomposite plated vias.

8. The PCB of claim 2 wherein the optical generation device and the optical reception device are connected though the Z axis to other PCB elements by the use of blind, buried or subcomposite conductive polymer vias.

9. The PCB of claim 3 wherein the optical generation device and the optical reception device are connected though the Z axis to other PCB elements by the use of blind, buried or subcomposite conductive polymer vias.

10. The PCB of claim 4 wherein the optical generation device and the optical reception device are connected though the Z axis to other PCB elements by the use of blind, buried or subcomposite conductive polymer vias.

11. The PCB of claim 5 in which multiple layers of optical elements formed on capacitor layers are laminated within the PCB.

12. The PCB of claim 6 in which multiple layers of optical elements formed on capacitor layers are laminated within the PCB.

13. The PCB of claim 7 in which multiple layers of optical elements formed on capacitor layers are laminated within the PCB.

14. The PCB of claim 8 in which multiple layers of optical elements formed on capacitor layers are laminated within the PCB.

15. The PCB of claim 9 in which multiple layers of optical elements formed on capacitor layers are laminated within the PCB.

16. The PCB of claim 10 in which multiple layers of optical elements formed on capacitor layers are laminated within the PCB.

17. A method for forming a PCB containing a capacitor layer with attached optical devices for the generation , transmission and reception of optical signals comprising the steps of :

coating the conductive layers of the capacitor layer with photolithigrapic material to define areas of both electrical conduction and optical paths

remove the conductive material in the desired areas,

place optically conductive fibers in the optical paths formed in the conductive layers,

securing the fibers in place connect the fibers to the optical generation and reception elements,

form electrical paths to the optical generation and reception elements by the means of blind, buried or subcomposite plated via holes and,

laminate the PCB layers together.

18. The method of claim 17 wherein the conductive material is removed by chemical etching.

19. The method of claim 17 wherein the optical path is formed in the conductive layer by laser ablation.

20. The method of claim 17 wherein the optical paths are filled with an optically conductive polymer not an optically conductive fiber.

21. The method of claim 18 wherein the PCB layers are laminated together prior to the forming of the electrical paths for the connection of the optical generation and reception elements by the means of blind, buried or subcomposite plated via holes.

22. The method of claim 19 wherein the PCB layers are laminated together prior to the forming of the electrical paths for the connection of the optical generation and reception elements by the means of blind, buried or subcomposite plated via holes.

23. The method of claim 20 wherein the PCB layers are laminated together prior to the forming of the electrical paths for the connection of the optical generation and reception elements by the means of blind, buried or subcomposite plated via holes.

24. A printed circuit board (PCB), comprising

multiple layers laminated about optical generation, transmission and reception elements the optical elements including:

a generation device,

a transmission element to provide an optically clear path between generation and reception elements,

and a reception device,

all optical elements being located on the same plane and connected electrically in the Z axis to all other printed circuit board elements and surface devices.

25. The PCB of claim 24 wherein the optical generation device and the optical reception device are connected though the Z axis to other PCB elements by the use of blind, buried or subcomposite plated vias.

26. The PCB of claim 24 wherein the optical generation device and the optical reception device are connected though the Z axis to other PCB elements by the use of blind, buried or subcomposite conductive polymer vias.

27. A method for forming a PCB containing a capacitor layer with attached optical devices for the generation , transmission and reception of optical signals comprising the steps of:

place optically conductive fibers in the optical paths formed in the conductive layers,

securing the fibers in place connect the fibers to the optical generation and reception elements,

laminate the PCB layers together,

form blind, buried or subcomposite vias to expose the end of the optical fiber,

form or attach the optical generation and/or reception elements at the ends of the optical fiber,

form final electrical paths to the optical generation and reception elements by the means of blind, buried or subcomposite plated via holes.